What is claimed is:

1. An EDR direction estimating method for estimating EDR directions in a single index model related to a large number of variables, comprising the steps of:

inputting a data file to be analyzed;

receiving data to be analyzed, the data composed of sets of response variables and explanatory variables, standardizing the explanatory variables, and outputting data composed of sets of standardized explanatory variables and response variables;

receiving the data composed of the sets of standardized explanatory variables and response variables, dividing the data into two slices with reference to a predetermined threshold for the response variables, calculating the mean vector of the standardized explanatory variables on a slice basis, and outputting the mean vector for each slice;

receiving the mean vector for each slice, calculating the difference between the two mean vectors to determine an EDR direction, and outputting the EDR direction data to data conversion means; and

converting the EDR direction data to a unit vector, and outputting the unit vector as an estimated value for the EDR direction.

2. A method according to claim 1, wherein when the inverse matrix of the correlation matrix exists, the EDR direction data is corrected by the inverse matrix of the correlation matrix in said step of calculating the EDR direction to send both the EDR direction data and the corrected EDR direction data to the data conversion means, or

when the inverse matrix of the correlation matrix does not exist, only the EDR direction data is sent to the data conversion means.

3. A method according to claim 1 or 2, wherein the threshold is the median of the response variables.

4. A method according to claim 1 or 2, wherein the threshold is the mean value of the response variables.

5. A method according to claim 1 or 2, wherein the threshold is 0.5 when the response variables are binary.

6. A method according to any one of claims 1 through 5, wherein missing values are removed from calculations for standardizing the explanatory variables, dividing the standarized explanatory variables into slices, and determining the mean vectors.

7. An EDR direction estimating system for estimating EDR directions in a single index model related to a large number of variables, including an input device for inputting a data file to be analyzed, a data analyzer operated under program control, and an output device, wherein said data analyzer includes

data conversion means, which receives data to be analyzed, the data composed of sets of response variables and explanatory variables, standardizes the explanatory variables, and outputs data composed of sets of standardized explanatory variables and response variables,

slice average calculating means, which takes in the data composed of the sets of standardized explanatory variables and response variables, divides the data into two slices with reference to a predetermined threshold for the response variables, calculates the mean vector of the standardized explanatory variables on a slice basis, and outputs the mean vector for each slice, and

EDR direction calculating means, which takes in the mean vector for each slice, calculates the difference between the two mean vectors to determine an EDR direction, and outputs the EDR direction data to said data conversion means, such that

5   said data conversion means converts the EDR direction data to a unit vector and outputs the unit vector to said output device as an estimated value for the EDR direction.

8. A system according to claim 7, wherein when the inverse

10 matrix of the correlation matrix exists, said EDR direction calculating means corrects the EDR direction by the inverse matrix of the correlation matrix and sends both the EDR direction data and the corrected EDR direction data to said data conversion means, or when the inverse matrix of the correlation matrix does not exist, said EDR direction calculating means sends only the

15 EDR direction data to said data conversion means.

9. An EDR direction estimating program for estimating EDR directions in a single index model related to a large number of variables, said program instructing a computer to execute the steps of:

20   inputting a data file to be analyzed;

receiving data to be analyzed, the data composed of sets of response variables and explanatory variables, standardizing the explanatory variables, and outputting data composed of sets of standardized explanatory variables and response variables;

25   receiving the data composed of the sets of standardized explanatory variables and response variables, dividing the data into two slices with reference to a predetermined threshold for the response variables, calculating the mean vector of the standardized explanatory variables on a slice basis, and outputting the mean vector for each slice;

receiving the mean vector for each slice, calculating the difference between the two mean vectors to determine an EDR direction, and outputting the EDR direction data to data conversion means; and

converting the EDR direction data to a unit vector, and outputting
5   the unit vector as an estimated value for the EDR direction.

10. A computer-readable memory medium with an EDR direction estimating program stored on it for instructing a computer to execute the steps of:

10   inputting a data file to be analyzed;

receiving data to be analyzed, the data composed of sets of response variables and explanatory variables, standardizing the explanatory variables, and outputting data composed of sets of standardized explanatory variables and response variables;

15   receiving the data composed of the sets of standardized explanatory variables and response variables, dividing the data into two slices with reference to a predetermined threshold for the response variables, calculating the mean vector of the standardized explanatory variables on a slice basis, and outputting the mean vector for each slice;

20   receiving the mean vector for each slice, calculating the difference between the two mean vectors to determine an EDR direction, and outputting the EDR direction data to data conversion means; and

converting the EDR direction data to a unit vector, and outputting the unit vector as an estimated value for the EDR direction.